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FLOOD INSURANCE STUDY

ORIGINAL
COMPLETED
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TOWNSHIP OF DEPTFORD, NEW JERSEY
GLOUCESTER COUNTY

MAY 17, 1982

Federal Emergency Management Agency

COMMUNITY NUMBER - 340199

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PUBLISHED SEPARATELY:

Flood Insurance Rate Map Index

Flood Insurance Rate Map

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1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the Township of Deptford, Gloucester County, New Jersey, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study will be used to convert Deptford to the regular program of flood insurance by the Federal Emergency Management Agency (FEMA). Local and regional planners will use this study in their efforts to promote sound flood plain management.

In some states or communities, flood plain management criteria or regulations may exist that are more restrictive or comprehensive than those on which these federally-supported studies are based. These criteria take precedence over the minimum federal criteria for purposes of regulating development in the flood plain, as set forth in the Code of Federal Regulations at 44 CFR, 60.3. In such cases, however, it shall be understood that the state (or other jurisdictional agency) shall be able to explain these requirements and criteria.

1.2 Authority and Acknowledgements

The source of authority for this Flood Insurance Study is the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this study were prepared by URS Company, Inc., for the Federal Emergency Management Agency, under Contract No. H-4808. This work was completed in February 1981.

1.3 Coordination

On May 9, 1978, detailed and approximate streams were determined at an initial Consultation and Coordination Officer's (CCO) meeting held with representatives of the FEMA, the Township of Deptford, and URS Company, Inc. (the study contractor). A search for basic data was made at all levels of government, including local officials. In November 1978, a letter was submitted to the mayor and town engineer requesting any available stream cross sections, profiles, topographic maps, drainage maps, recorded floodmarks from past storms, local flood protection

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improvements that have been implemented or planned, information pertaining to the history of the township, available benchmarks, and information which the township wanted incorporated in the study.

A joint intermediate CCO meeting was held on February 27, 1981, at the municipal offices in Deptford. Local officials were invited to review and comment upon the preliminary delineations and profiles. On January 6, 1982, the results of the study were reviewed at a final CCO meeting held with representatives of the FEMA, the township, and the study contractor.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the Township of Deptford, Gloucester County, New Jersey. The area of study is shown on the Vicinity Map (Figure 1).

Big Timber Creek, from the downstream corporate limits to the confluence of South and North Branches Big Timber Creek, and South Branch Big Timber Creek, from its confluence with Big Timber Creek to the upstream corporate limits were studied by detailed methods. The tidal portion of the Delaware River affecting the township was also studied by detailed methods. The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction for the next five years, through February 1986.

Almonesson Creek was studied by approximate methods. Approximate methods of analysis were used to study those areas having low development potential and minimal flood hazards as identified at the initiation of the study. The scope and methods of study were proposed to and agreed upon by the FEMA.

2.2 Community Description

The Township of Deptford is located in the northern portion of Gloucester County in southwestern New Jersey, approximately 5 miles south of the City of Camden. It is bordered by the Borough of Westville to the north, the Boroughs of Bellmawr, Runnemede, and Gloucester to the east, the Townships of Washington and Mantua to the south, and the Boroughs of Wenonah and Woodbury Heights, the City of Woodbury, and the Township of West Deptford to the west. Deptford, which covers 17.6 square miles, includes the communities of Almonesson, Jericho, New Sharon, Oak Valley, Westville Grove, Westcotville, Gardenville Center, Blackwood Terrace, and

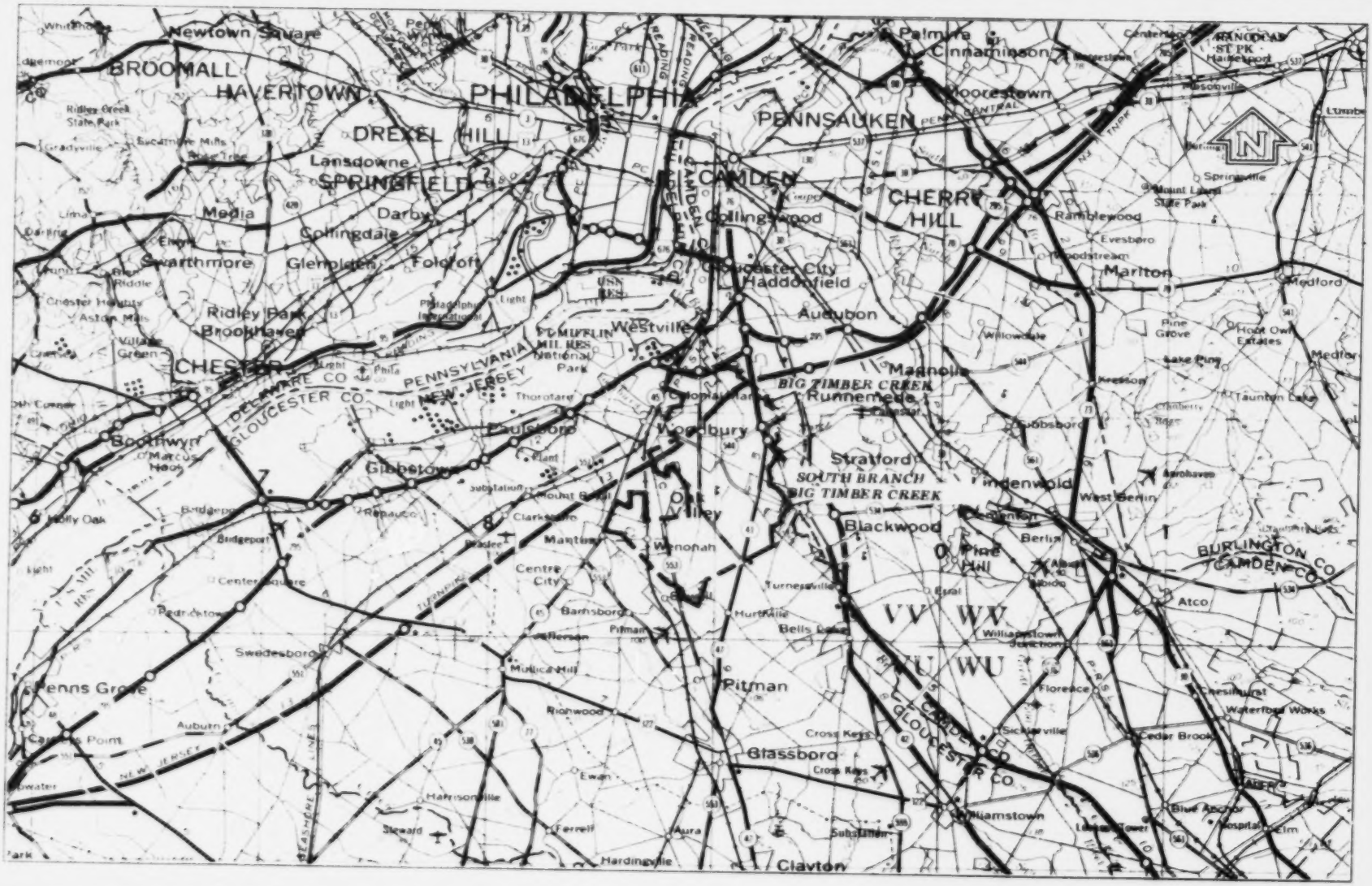

FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF DEPTFORD, NJ
(GLOUCESTER CO.)

APPROXIMATE SCALE

4 0 4 8 12 MILES

VICINITY MAP

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many other residential communities. The estimated population of the township was 25,017 in 1977, an estimated 50-percent increase in the last 15 years.

The original Township of Deptford, named after an English seaport, was incorporated in 1695. Deptford was settled by a mixture of Dutch, Swedish, Finnish, and English people. Many communities were founded around churches and mills or were carved from large plantations and hunting clubs. The township remained a group of small, isolated semi-rural communities until the 1960s, when its proximity to the Camden-Philadelphia metropolitan area brought large scale suburban development.

Deptford is located in the inner plain of the Atlantic Plain physiographic province. This inner plain is separated from the remainder of the coastal plain by a ridge extending from Atlantic Highlands through Beacon Hill to Mullica Hill. The inner plain is the lowland north and west of the steep slope of the ridge, with drainage to the Delaware River. The outer plain is the very gentle slope of the ridge, having drainage to the Atlantic Ocean and Delaware Bay. Both parts of the coastal plain share similar traits such as unconsolidated clays, sands, marls, and gravels, however, there is a greater proportion of clays in sediments of the inner coastal plain. The coastal plain is geologically the youngest, softest, and least resistant to erosion and topographically the flattest and lowest area in the state. Geographically, the inner coastal plain is part of the megalopolis.

The average annual precipitation is approximately 42 inches. The area is temperate with an average annual temperature of 55 degrees Fahrenheit.

The streams within the township are presently bordered by large areas of tidal marshes, and the adjacent overbank areas are mostly wooded and currently undeveloped. However, as this section of the state continues to grow, there is potential that these flood plain areas will be developed.

2.3 Principal Flood Problems

Although Deptford is subject to both tidal and fluvial flooding from Big Timber Creek and South Branch Timber Creek, there has been only minor flood damage reported. In September 1940, the largest non-tidal flood to strike the area caused numerous dam failures, road and bridge failures, and several deaths in Gloucester County. The failure of the dam at Blackwood Lake in the Township of Washington caused flooding in the Deptford community of Blackwood Terrace.

In August 1933, tide conditions on the Delaware River, in conjunction with local heavy rains, resulted in the highest recorded tidal flood along Big Timber Creek. The estimated tidal stage of this flood at the

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mouth of Big Timber Creek was 8.6 feet as compared to a statistical 100-year event, which has a stage of 10 feet. Other major floods occurred in the basin in August 1955 and November 1950.

2.4 Flood Protection Measures

There are no major flood control structures or measures either existing, authorized, or proposed in Deptford or upstream in the watershed.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data for this study. Flood events of a magnitude which are expected to be equalled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for flood plain management and for flood insurance premium rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equalled or exceeded during any year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than one year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (one-percent chance of annual occurrence) in any 50-year period is about 40 percent (four in ten) and, for any 90-year period, the risk increases to about 60 percent (six in ten). The analyses reported here reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency and peak elevation-frequency relationships for floods of the selected recurrence intervals for each flooding source studied in detail affecting the community.

The hydrologic analysis for Big Timber Creek and South Branch Timber Creek was developed using U. S. Geological (USGS) gages located in the Big Timber Creek basin. USGS gage No. 01467330 is located along South Branch Big Timber Creek at Blackwood, New Jersey. This gage has a drainage area of 19 square miles and has been in operation since 1964. USGS gage No. 01467351 is located along North Branch Big Timber Creek at Laurel Springs, New Jersey. This gage has a drainage area of 7.2 square miles and has been in operation since 1975. Because of the short period of record for both gages, a U. S. Army Corps of Engineers (COE) regional-

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frequency analysis utilizing the Generalized Skew Study for the State of New Jersey was used to develop frequency-discharge curves at the gage locations (Reference 1). In conjunction with these data, frequency-discharge curves for other locations within the basin were generated by a rainfall-runoff model of Big Timber Creek using the COE HEC-1 computer program (Reference 2). The 500-year peak discharges were determined from a linear extrapolation of a log-probability curve of flood discharges computed for frequencies up to 100 years.

A summary of drainge area-peak discharge relationships for Big Timber Creek and South Branch Big Timber Creek is shown in Table 1, "Summary of Discharges".

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
BIG TIMBER CREEK					
Downstream of the confluence with North Branch Big Timber Creek	44.5	2,400	4,460	5,580	7,800
SOUTH BRANCH BIG TIMBER CREEK					
Upstream of the confluence with North Branch Big Timber Creek	25.4	1,400	2,580	3,250	5,400
At Good Intent Road	19.2	1,210	2,220	2,810	4,400

The hydrologic analysis of the Delaware River used in the Flood Insurance Study of the City of Philadelphia, Pennsylvania, was adopted for this study (Reference 3). In that study, tidal elevation-frequency relationships for the Delaware River were prepared by the Philadelphia District of the U. S. Army Corps of Engineers (COE) (Reference 4). Tidal elevations were interpolated from the frequency curves for the 10-, 50-, 100- and 500-year floods at the mouths of tributary streams of the Delaware River.

TABLE 2 - SUMMARY OF ELEVATIONS

FLOODING SOURCE AND LOCATION	ELEVATION (feet) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
DELAWARE RIVER	7.7	9.1	10.0	14.7

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3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of the flooding sources studied in detail were carried out to provide estimates of the elevations of floods of the selected recurrence intervals along each of these flooding sources.

Hydraulic analyses of the shoreline characteristics of the Delaware River were carried out to provide estimates of the elevations of floods of the selected recurrence intervals along the shoreline. Tidal analyses for the Delaware River were taken directly from the Flood Insurance Study for the City of Philadelphia (Reference 3).

Channel cross sections and partial overbank cross sections were obtained through field surveys. Cross sections for the backwater analyses were selected at close intervals above and below bridges and culverts in order to compute the significant backwater effects of those structures. All bridges and culverts were surveyed to obtain elevation data and structural geometry.

Channel roughness coefficients (Manning's "n") used in the hydraulic computations were assigned on the basis of field inspection of various cross sections in the flood plain areas. The channel "n" values for Big Timber Creek ranged from 0.035 to 0.045, and the overbank "n" values ranged from 0.070 to 0.090. The channel "n" values for South Branch Big Timber Creek ranged from 0.020 to 0.070, and the overbank "n" values ranged from 0.070 to 0.150.

Water-surface elevations of floods of the selected recurrence intervals were computed through the use of the COE HEC-2 step-backwater computer program (Reference 5). Starting water-surface elevations for Big Timber Creek were obtained from the one-year tidal elevation of the Delaware River. Starting water-surface elevations for South Branch Big Timber Creek were determined using coincident flood peaks at its confluence with Big Timber Creek.

Flood profiles were drawn showing computed water-surface elevations to an accuracy of 0.5 foot for floods of the selected recurrence intervals. Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway is computed (Section 4.2), selected cross-section locations are also shown on the Flood Boundary and Floodway Map (Exhibit 3).

All elevations used in this study are referenced to the National Geodetic Vertical Datum of 1929 (NGVD), formerly referred to as Sea Level Datum of 1929. Locations of the elevation reference marks used in the study are shown on the maps.

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The hydraulic analyses for this study are based on the effects of unobstructed flow. The flood elevations shown on the profiles are valid only if hydraulic structures remain unobstructed, and dams and other flood control structures operate properly and do not fail.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages state and local governments to adopt sound flood plain management programs. Therefore, each Flood Insurance Study includes a flood boundary map designed to assist communities in developing sound flood plain management measures.

4.1 Flood Boundaries

In order to provide a national standard without regional discrimination, the 100-year flood has been adopted by the FEMA as the base flood for purposes of flood plain management measures. The 500-year flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the boundaries of the 100- and 500-year floods have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:2,400 with a contour interval of 5 feet (Reference 6). In cases where the 100- and 500-year flood boundaries are close together, only the 100-year boundary has been shown.

For the stream studied by approximate methods, the boundary of the 100-year flood was delineated using the Flood Hazard Boundary Map for the Township of Deptford (Reference 7).

The boundaries of the 100- and 500-year floods are shown on the Flood Boundary and Floodway Map (Exhibit 3). Small areas within the flood boundaries may lie above the flood elevations and, therefore, may not be subject to flooding. Owing to limitations of the map scale and lack of detailed topographic data, such areas are not shown.

4.2 Floodways

Encroachment on flood plains, such as artificial fill, reduces the flood-carrying capacity, increases the flood heights of streams, and increases flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For purposes of the Flood Insurance Program, the concept of a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood is divided into a floodway and a floodway fringe. The floodway is the channel of a stream plus any adjacent flood plain areas that must be

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kept free of encroachment in order that the 100-year flood can be carried without substantial increases in flood heights. Minimum standards of the FEMA limit such increases in flood heights to 1.0 foot, provided that hazardous velocities are not produced. However, the State of New Jersey has established criteria limiting the increase in flood heights to 0.2 foot. Thus, floodways having no more than a 0.2-foot surcharge have been delineated for this study. The floodways in this report are presented to local agencies as minimum standards that can be adopted or that can be used as a basis for additional studies.

The floodways presented in this study were computed on the basis of equal conveyance reduction from each side of the flood plains. The results of these computations are tabulated at selected cross sections for each stream segment for which a floodway is computed (Table 3).

As shown on the Flood Boundary and Floodway Map (Exhibit 3), the floodway widths were determined at cross sections; between cross sections, the boundaries were interpolated. In cases where the boundaries of the floodway and the 100-year flood are either close together or collinear, only the floodway boundary has been shown. Portions of the floodway widths for Big Timber Creek and South Branch Timber Creek extend beyond the corporate limits.

The area between the floodway and the boundary of the 100-year flood is termed the floodway fringe. The floodway fringe thus encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 0.2 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 2.

Near the mouths of streams studied in detail, floodway computations are made without regard to flood elevations on the receiving water body. Therefore, "With Floodway" elevations presented in Table 3 for certain downstream cross sections of Big Timber Creek and South Branch Big Timber Creek are lower than the regulatory flood elevations in that area, which must take into account the 100-year flooding due to backwater from other sources.

5.0 INSURANCE APPLICATION

In order to establish actuarial insurance rates, the FEMA has developed a process to transform the data from the engineering study into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors (FHFs), and flood insurance zone designations for each flooding source affecting the Township of Deptford.

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Big Timber Creek								
A	16,990	270/160	3,410	2.0	10.0	7.2[3]	7.3	0.1
B	18,340	270/120	3,420	2.0	10.0	7.4[3]	7.4	0.0
C	23,120	670/500	5,150	1.2	10.0	7.8[3]	7.8	0.0
D	27,300	200/90	2,295	2.5	10.0	8.2[3]	8.2	0.0
E	28,260	133/62	1,626	3.5	10.0	8.3[3]	8.4	0.1
South Branch Big Timber Creek								
A	32,960	240/120	2,068	1.6	10.0	8.8[3]	8.9	0.1
B	38,660	455/340	4,071	0.7	10.0	9.2[3]	9.4	0.2
C	44,240	438/370	2,143	1.3	10.0	9.6[3]	9.8	0.2
D	48,102	85/40	703	4.0	17.5	17.5	17.7	0.2

[1]Feet above confluence with the Delaware River
[2]Width/width within corporate limits
[3]Elevation computed without consideration of backwater effects from Delaware River

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF DEPTFORD, NJ
(GLOUCESTER CO.)

FLOODWAY DATA

BIG TIMBER CREEK AND SOUTH BRANCH BIG TIMBER CREEK

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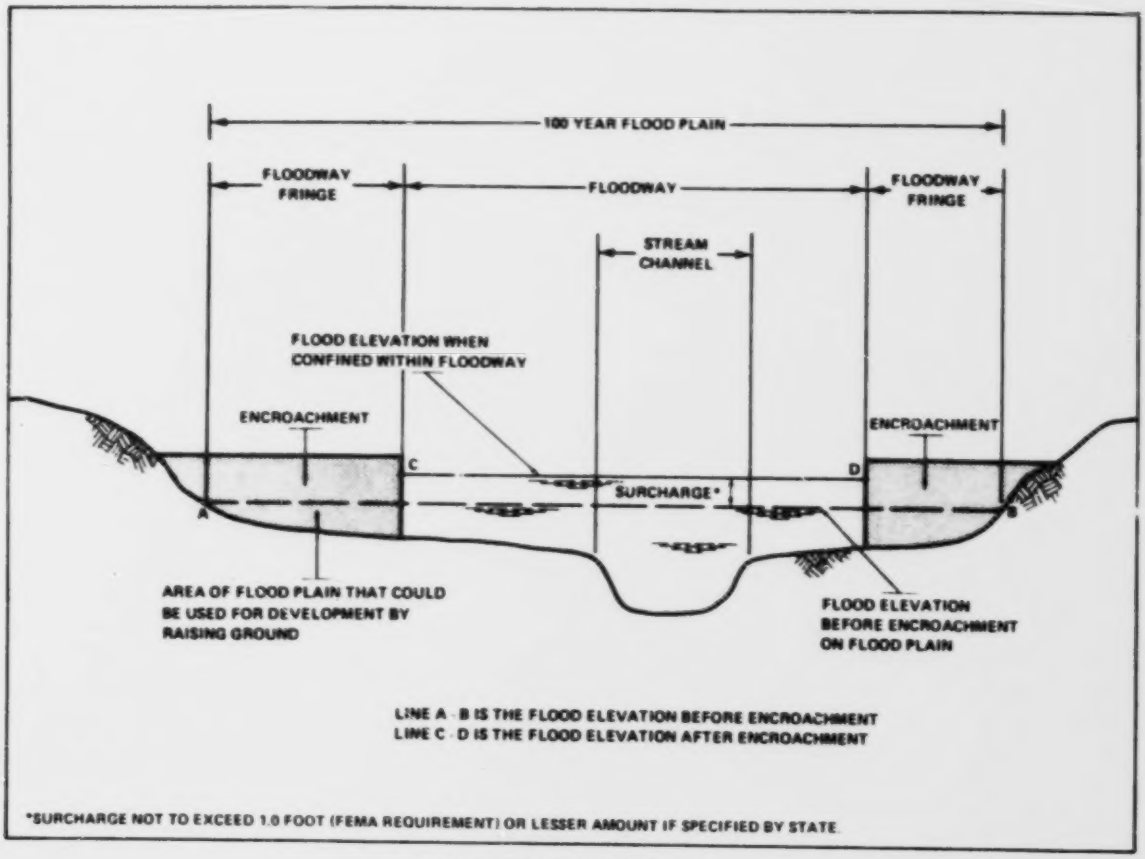
100 YEAR FLOOD PLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY
ENCROACHMENT
ENCROACHMENT
C
D
SURCHARGE*
A
B
AREA OF FLOOD PLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOOD PLAIN
LINE A - B IS THE FLOOD ELEVATION BEFORE ENCROACHMENT
LINE C - D IS THE FLOOD ELEVATION AFTER ENCROACHMENT
*SURCHARGE NOT TO EXCEED 1.0 FOOT (FEMA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE

FLOODWAY SCHEMATIC Figure 2

5.1 Reach Determinations

Reaches are defined as lengths of watercourses having relatively the same flood hazard, based on the average weighted difference in water-surface elevations between the 10- and 100-year floods. This difference does not have a variation greater than that indicated in the following table for more than 20 percent of the reach.

Average Difference Between 10- and 100-Year Floods	Variation
Less than 2 feet	0.5 foot
2 to 7 feet	1.0 foot
7.1 to 12 feet	2.0 feet
More than 12 feet	3.0 feet

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In tidal areas, reaches are limited to the distance for which the difference between the 10- and 100-year flood elevations does not vary more than 1.0 foot. Using these criteria, the Deptford shoreline qualifies as one reach whose flooding source is the Delaware River. The locations of these reaches are shown on the Flood Insurance Rate Map.

The locations of the reaches determined for the flooding sources of the Township of Deptford are shown on the Flood Profiles (Exhibit 1) and are summarized in the Flood Insurance Zone Data Table (Table 4).

5.2 Flood Hazard Factors

The FHF is the FEMA device used to correlate flood information with insurance rate tables. Correlations between property damage from floods and their FHFs are used to set actuarial insurance premium rate tables based on FHFs from 005 to 200.

The FHF for a reach is the average weighted difference between the 10- and 100-year flood water-surface elevations expressed to the nearest 0.5 foot, and shown as a three-digit code. For example, if the difference between water-surface elevations of the 10- and 100-year floods is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference between the 10- and 100-year water-surface elevations is greater than 10.0 feet, accuracy for the FHF is to the nearest foot.

5.3 Flood Insurance Zones

After the determination of reaches and their respective FHFs, the entire incorporated area of the Township of Deptford was divided into zones, each having a specific flood potential or hazard. Each zone was assigned one of the following flood insurance zone designations:

Zone A: Special Flood Hazard Areas inundated by the 100-year flood, determined by approximate methods; no base flood elevations shown or FHFs determined.

Zones A5 and A6: Special Flood Hazard Areas inundated by the 100-year flood, determined by detailed methods; base flood elevations shown, and zones subdivided according to FHF.

Zone B: Areas between the Special Flood Hazard Area and the limits of the 500-year flood, including areas of the 500-year flood plain that are protected from the 100-year flood by dike, levee, or other water control structure; also, areas subject to certain types of 100-year shallow flooding where depths are less than

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Delaware River (Backwater Affecting Big Timber Creek and South Branch Big Timber Creek)	02,04, 06	-2.3	-0.9	+4.7	025	A5	10
South Branch Big Timber Creek Reach 1	06	-3.0	-0.8	+2.0	030	A6	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF DEPTFORD, NJ
(GLOUCESTER CO.)

FLOOD INSURANCE ZONE DATA

DELAWARE RIVER AND SOUTH BRANCH BIG TIMBER CREEK

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Zone B (continued): 1.0 foot; and areas subject to 100-year flooding from sources with drainage areas less than 1 square mile. Zone B is not subdivided.

Zone C: Areas of minimal flooding.

Table 4, "Flood Insurance Zone Data," summarizes the flood elevation differences, FHFs, flood insurance zones, and base flood elevations for the flooding sources studied in detail in the Township of Deptford.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for the Township of Deptford is, for insurance purposes, the principal result of the Flood Insurance Study. This map (published separately) contains the official delineation of flood insurance zones and base flood elevation lines. Base flood elevation lines show the locations of the expected whole-foot water-surface elevations of the base (100-year) flood. This map is developed in accordance with the latest flood insurance map preparation guidelines published by the FEMA.

6.0 OTHER STUDIES

Flood Insurance Studies for the Township of Gloucester and the Boroughs of Belmawr, Runnemade, and Westville have been completed (References 8, 9, 10, and 11). The results of this study are in exact agreement with the results of those studies. Information from the COE Flood Plain Information report for Big Timber Creek was utilized in this study (Reference 12).

The Flood Insurance Study for the Township of Mantua is currently being prepared (Reference 13). The results of that study will be in exact agreement with the results of this study.

This study is authoritative for purposes of the Flood Insurance Program, and the data presented here either supersede or are compatible with previous determinations.

7.0 LOCATION OF DATA

Survey, hydrologic, hydraulic, and other pertinent data used in this study can be obtained by contacting the office of the Insurance and Mitigation Division of the Federal Emergency Management Agency, Regional Director, Region II Office, 26 Federal Plaza, Room 19-100, New York, New York 10278.

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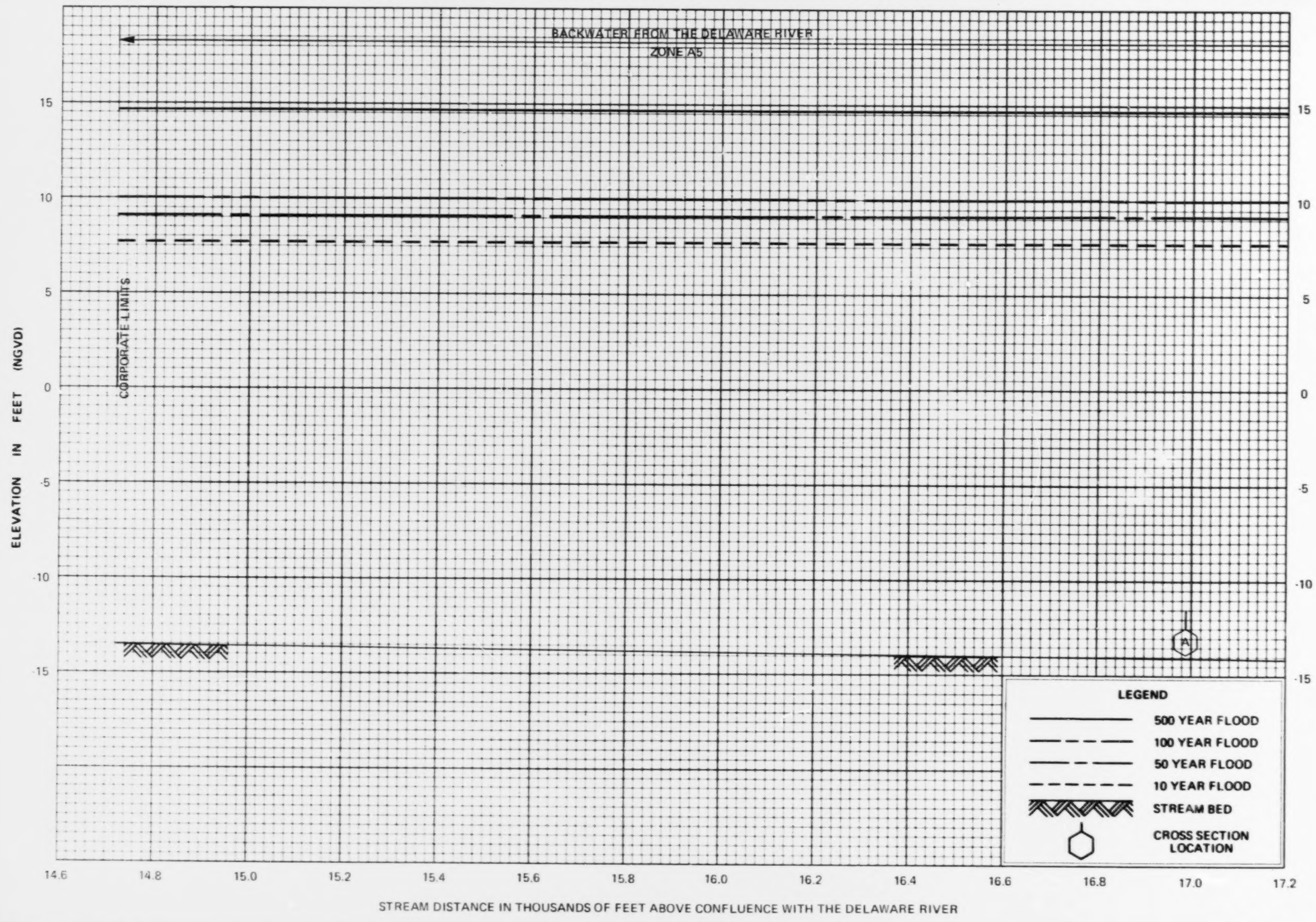

FLOOD PROFILES

BIG TIMBER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF DEPTFORD, NJ
(GLOUCESTER CO.)

01P

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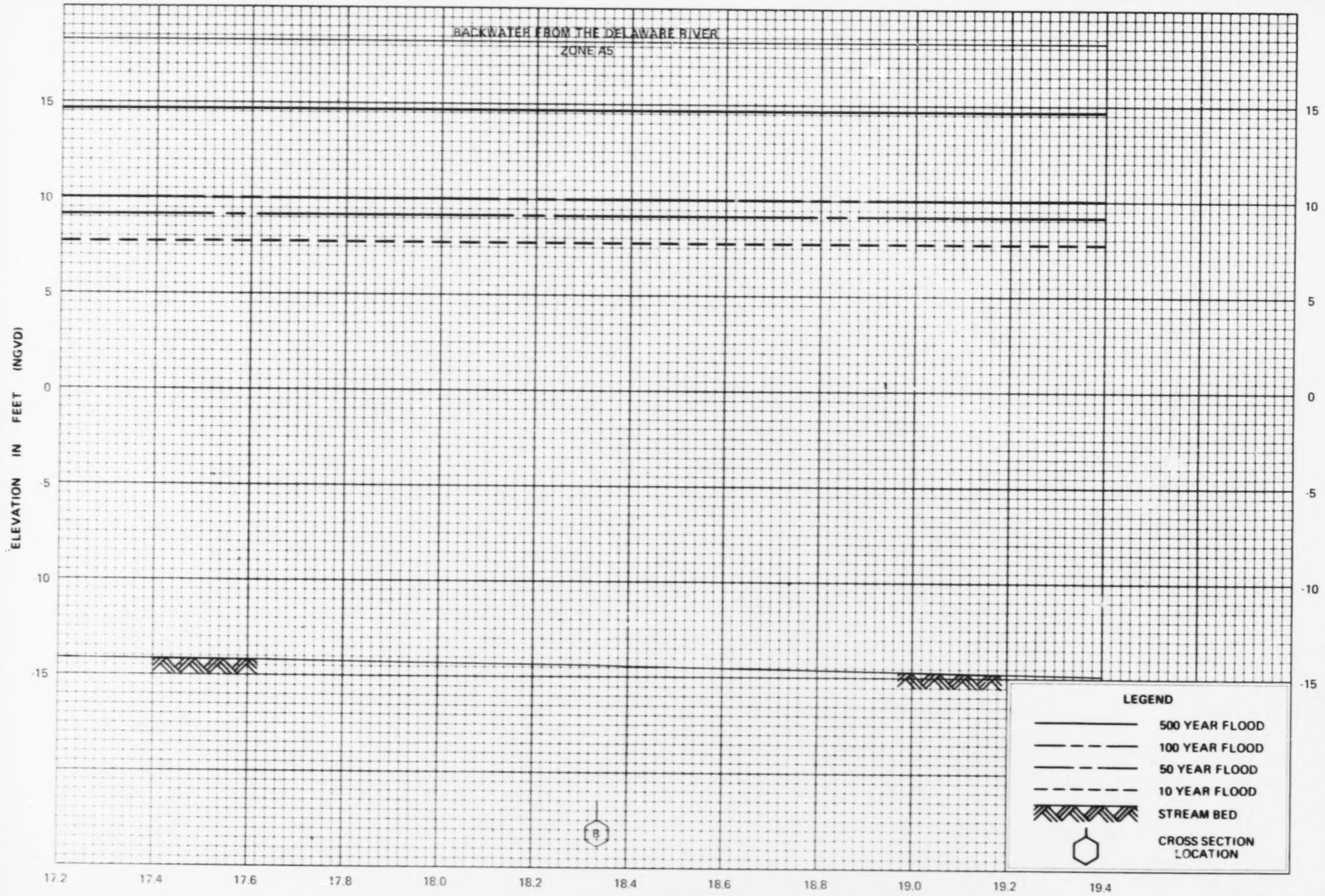

FLOOD PROFILES

BIG TIMBER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF DEPTFORD, NJ
(GLOUCESTER CO.)

02P

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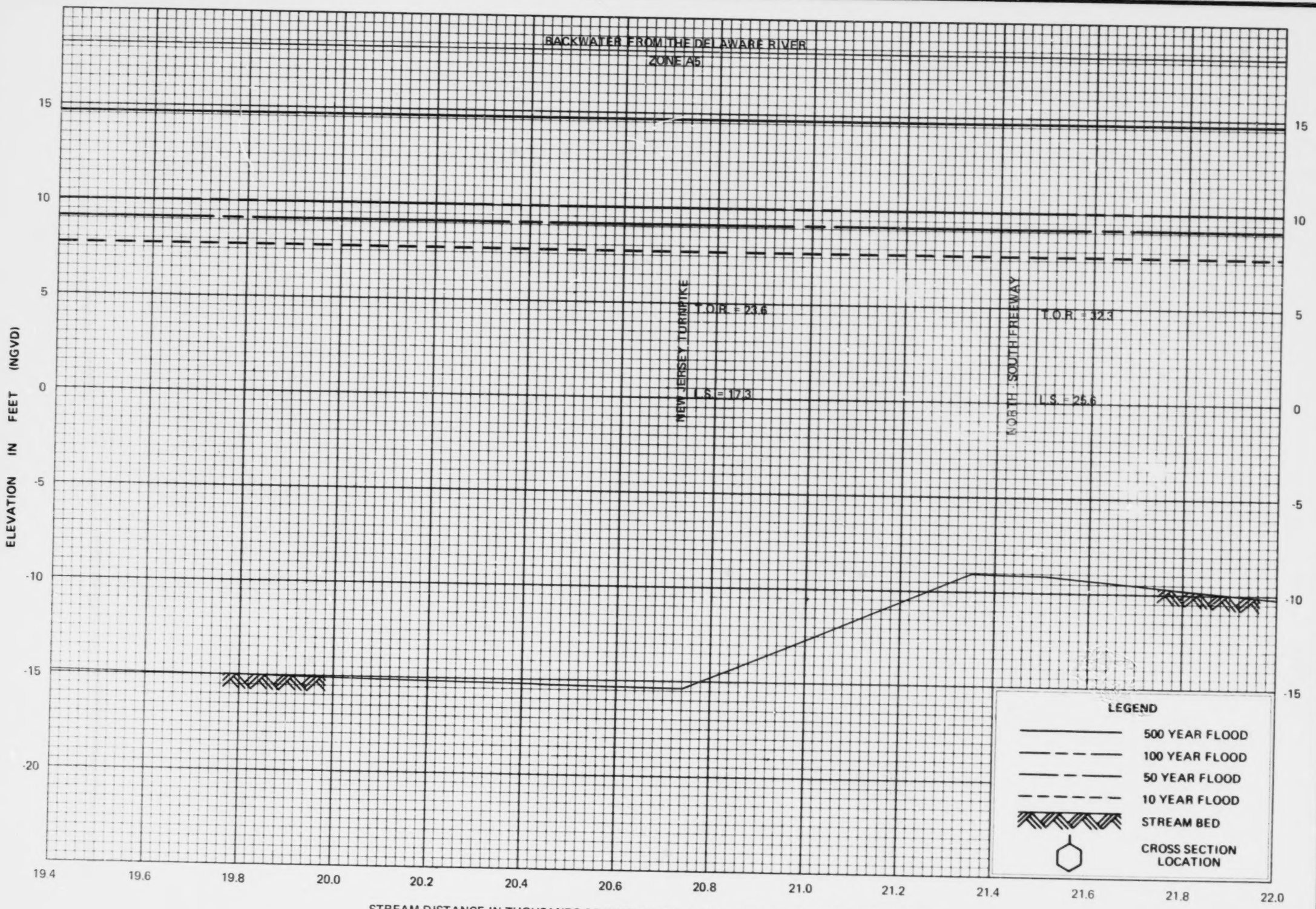

FLOOD PROFILES

BIG TIMBER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF DEPTFORD, NJ
(GLOUCESTER CO.)

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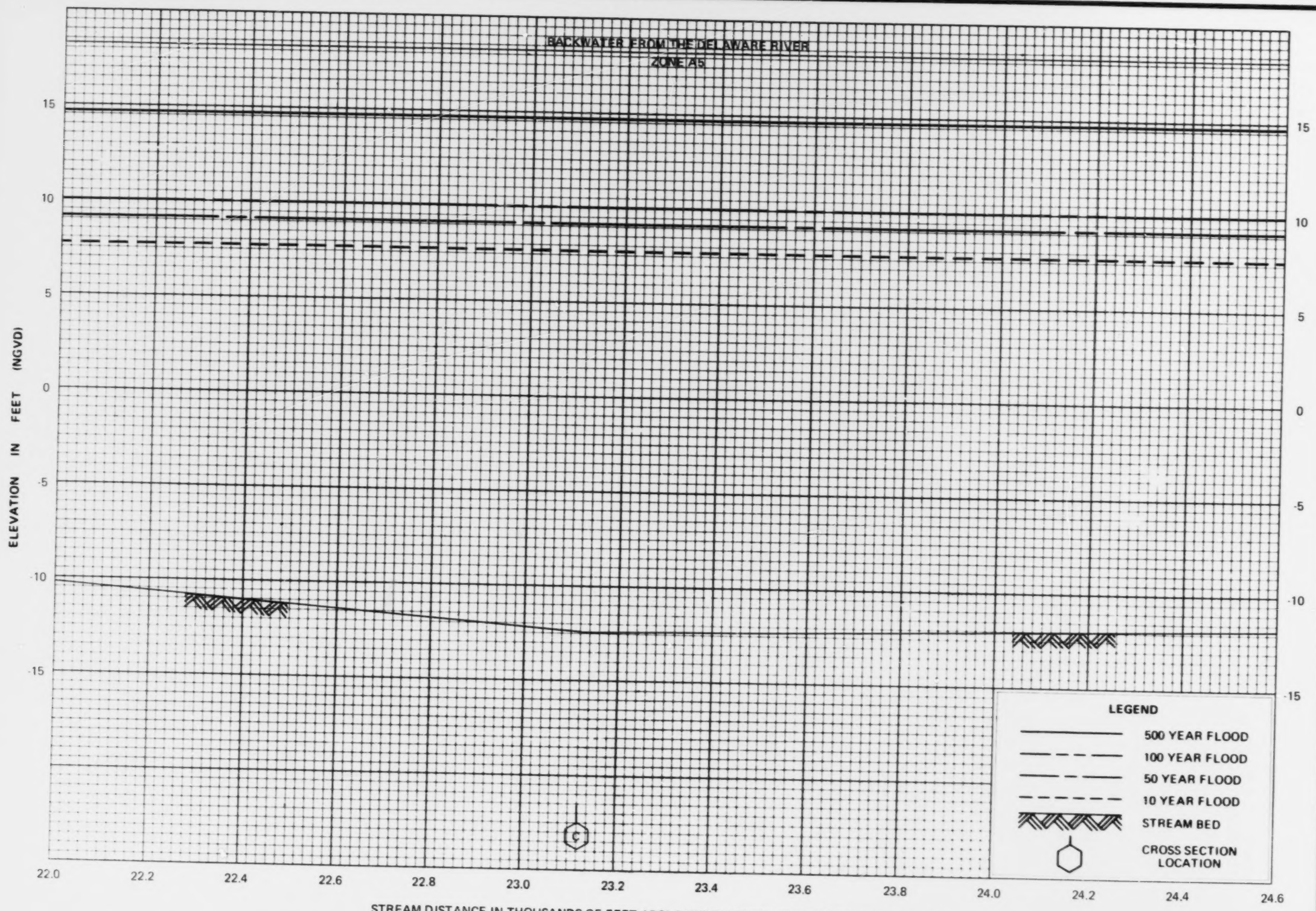

FLOOD PROFILES

BIG TIMBER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF DEPTFORD, NJ
(GLOUCESTER CO.)

04P

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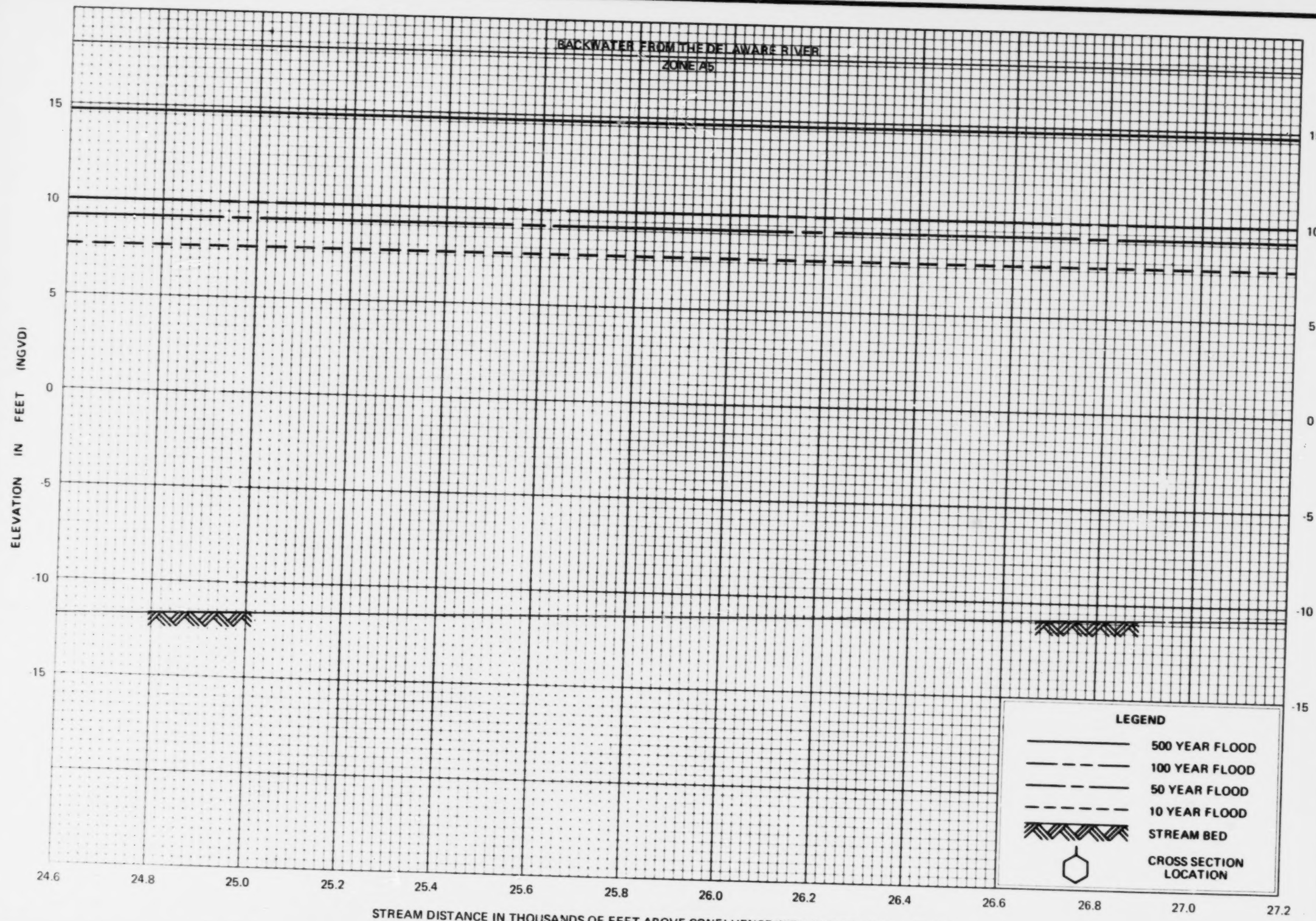

FLOOD PROFILES

BIG TIMBER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF DEPTFORD, NJ
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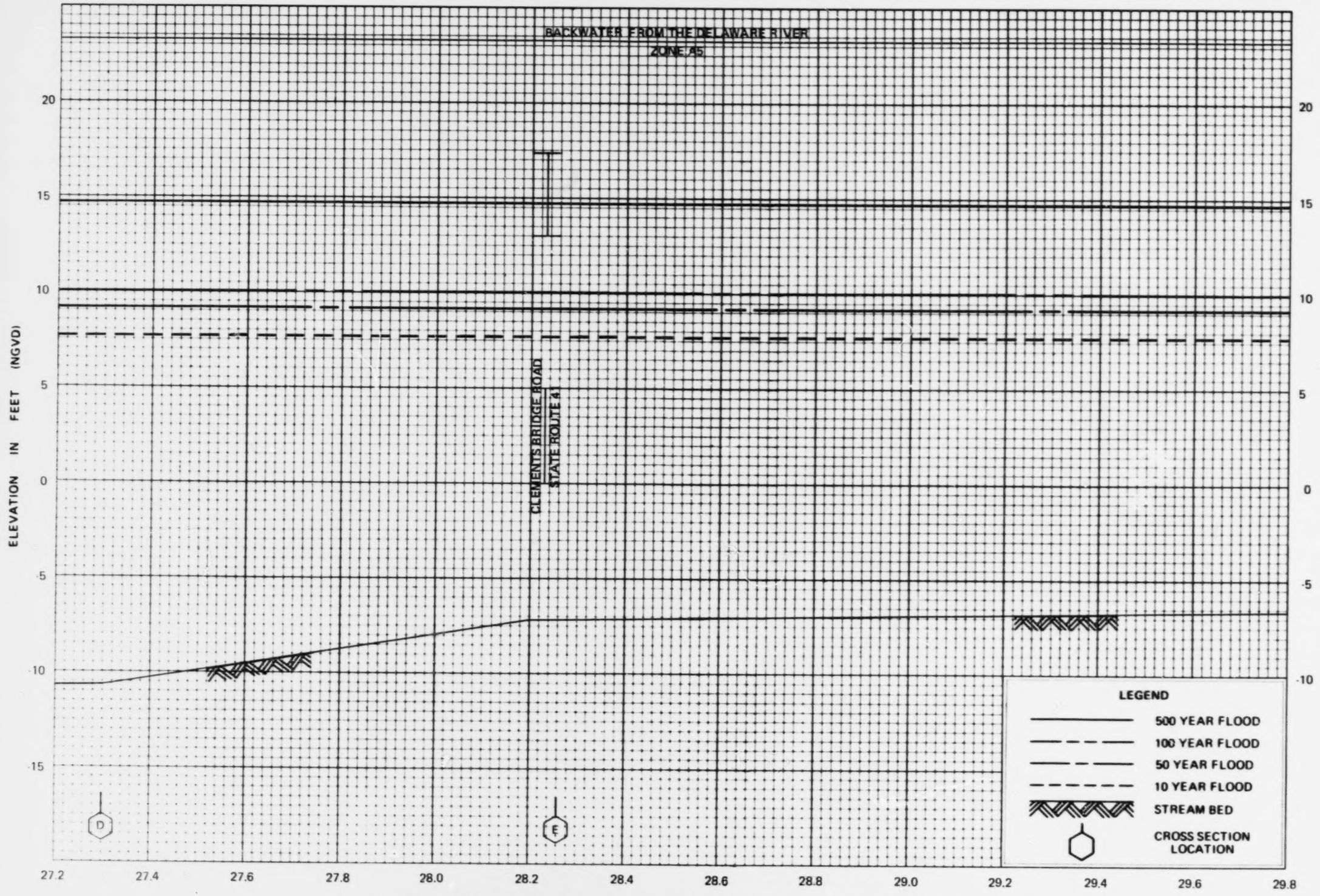

FLOOD PROFILES

BIG TIMBER CREEK

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06P

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BACKWATER FROM THE DELAWARE RIVER
ZONE A5

BIG TIMBER CREEK | SOUTH BRANCH BIG TIMBER CREEK

ELEVATION IN FEET (NGVD)

15
10
5
0
-5
-10

29.8 30.0 30.2 30.4 30.6 30.8 31.0 31.2 31.4 31.6 31.8 32.0 32.2 32.4

STREAM DISTANCE IN THOUSANDS OF FEET ABOVE CONFLUENCE WITH THE DELAWARE RIVER

LEGEND
- 500 YEAR FLOOD
- 100 YEAR FLOOD
- 50 YEAR FLOOD
- 10 YEAR FLOOD
- STREAM BED
- CROSS SECTION LOCATION

FLOOD PROFILES

BIG TIMBER CREEK-SOUTH BRANCH BIG TIMBER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF DEPTFORD, NJ
(GLOUCESTER CO.)

07P

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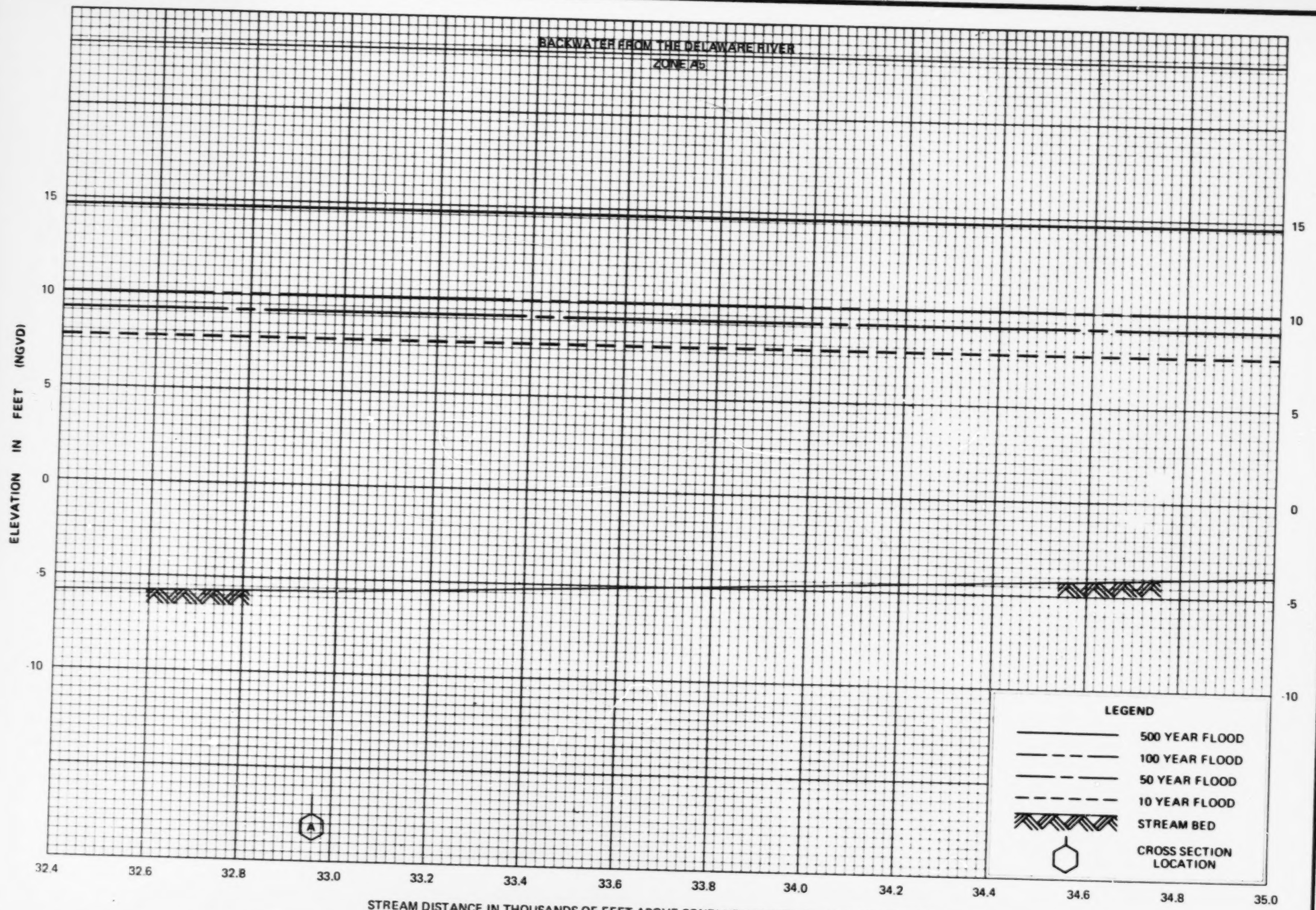

FLOOD PROFILES

SOUTH BRANCH BIG TIMBER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF DEPTFORD, NJ
(GLOUCESTER CO.)

08P

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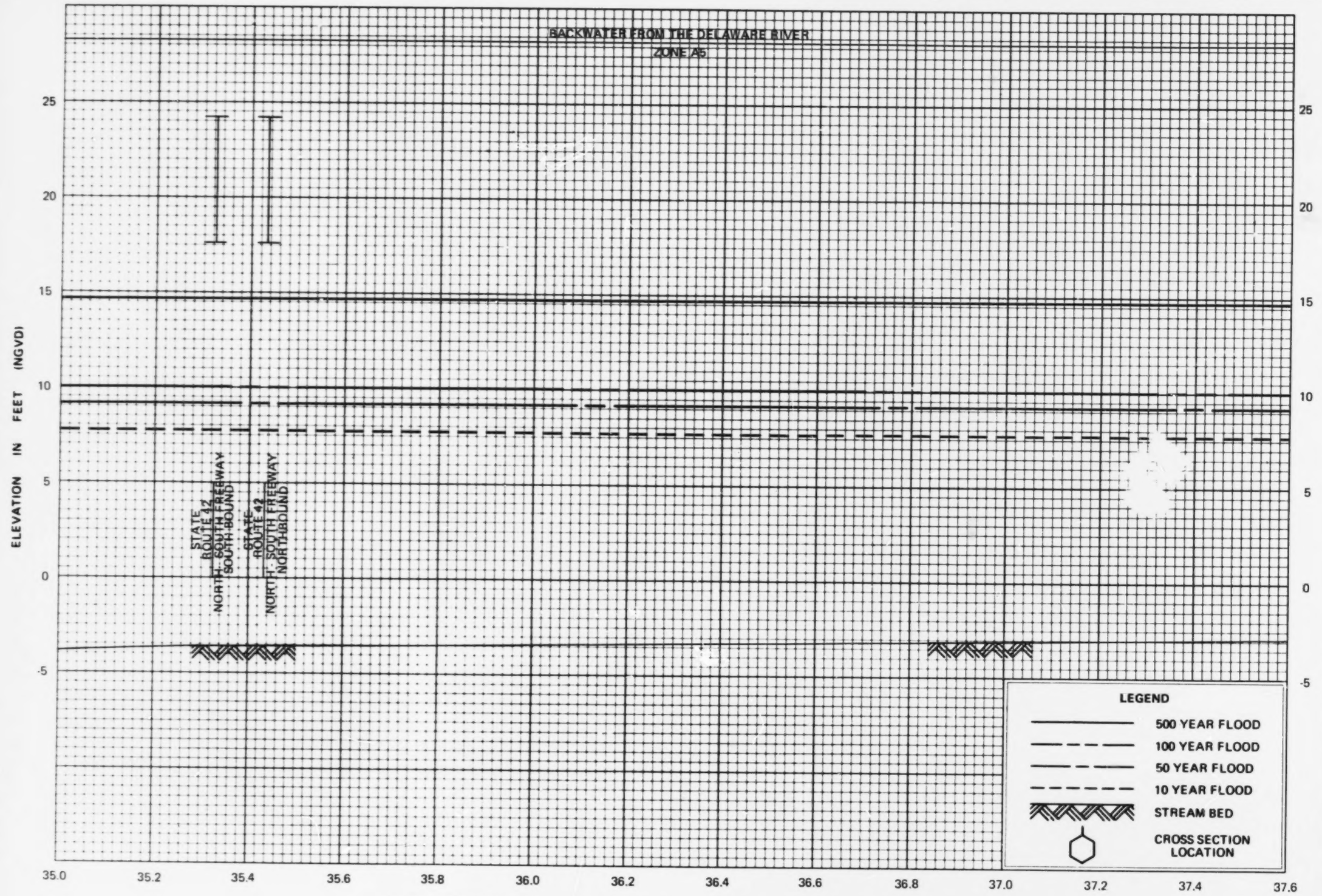

FLOOD PROFILES

SOUTH BRANCH BIG TIMBER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF DEPTFORD, NJ
(GLOUCESTER CO.)

09P

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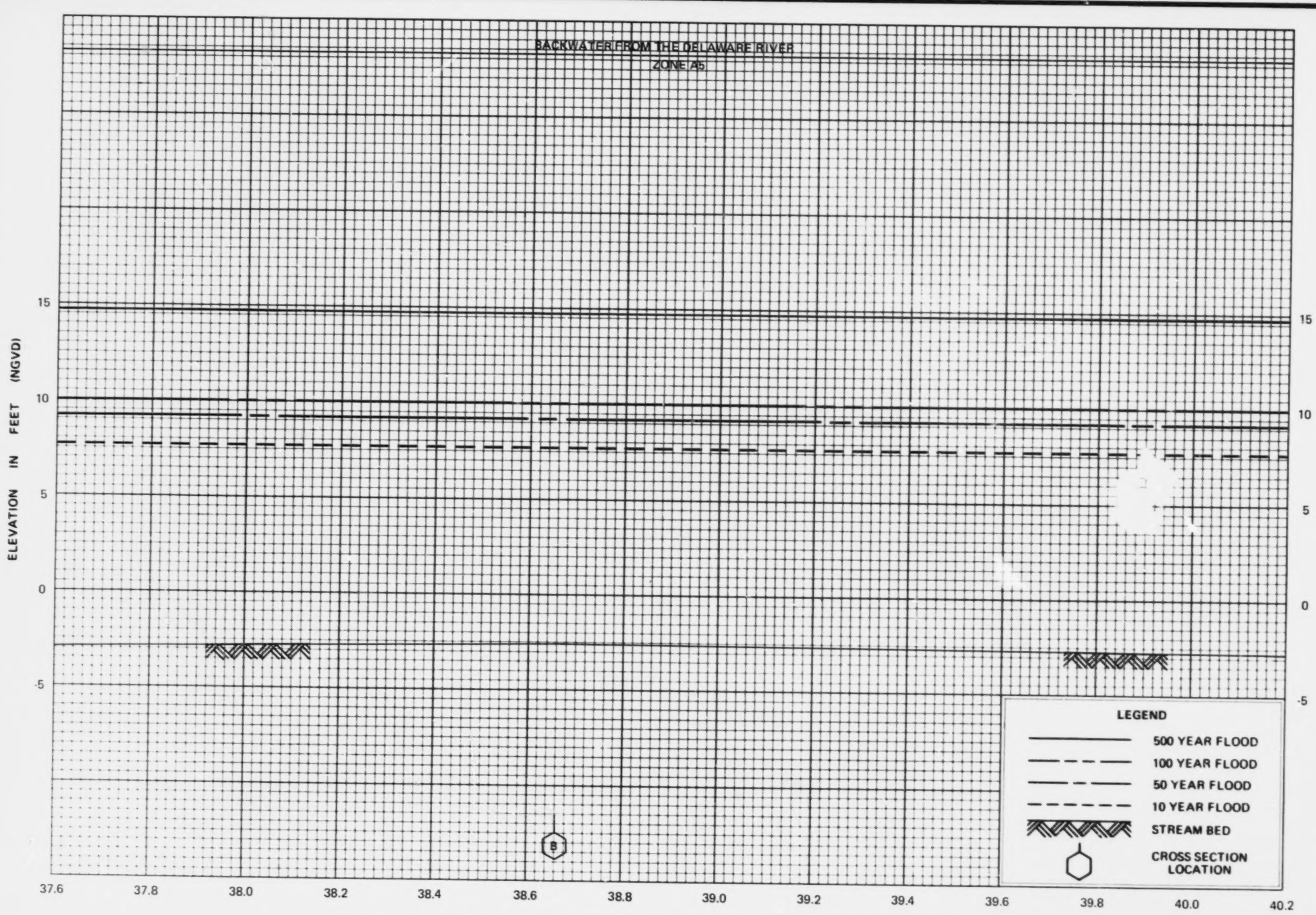

FLOOD PROFILES

SOUTH BRANCH BIG TIMBER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF DEPTFORD, NJ
(GLOUCESTER CO.)

10P

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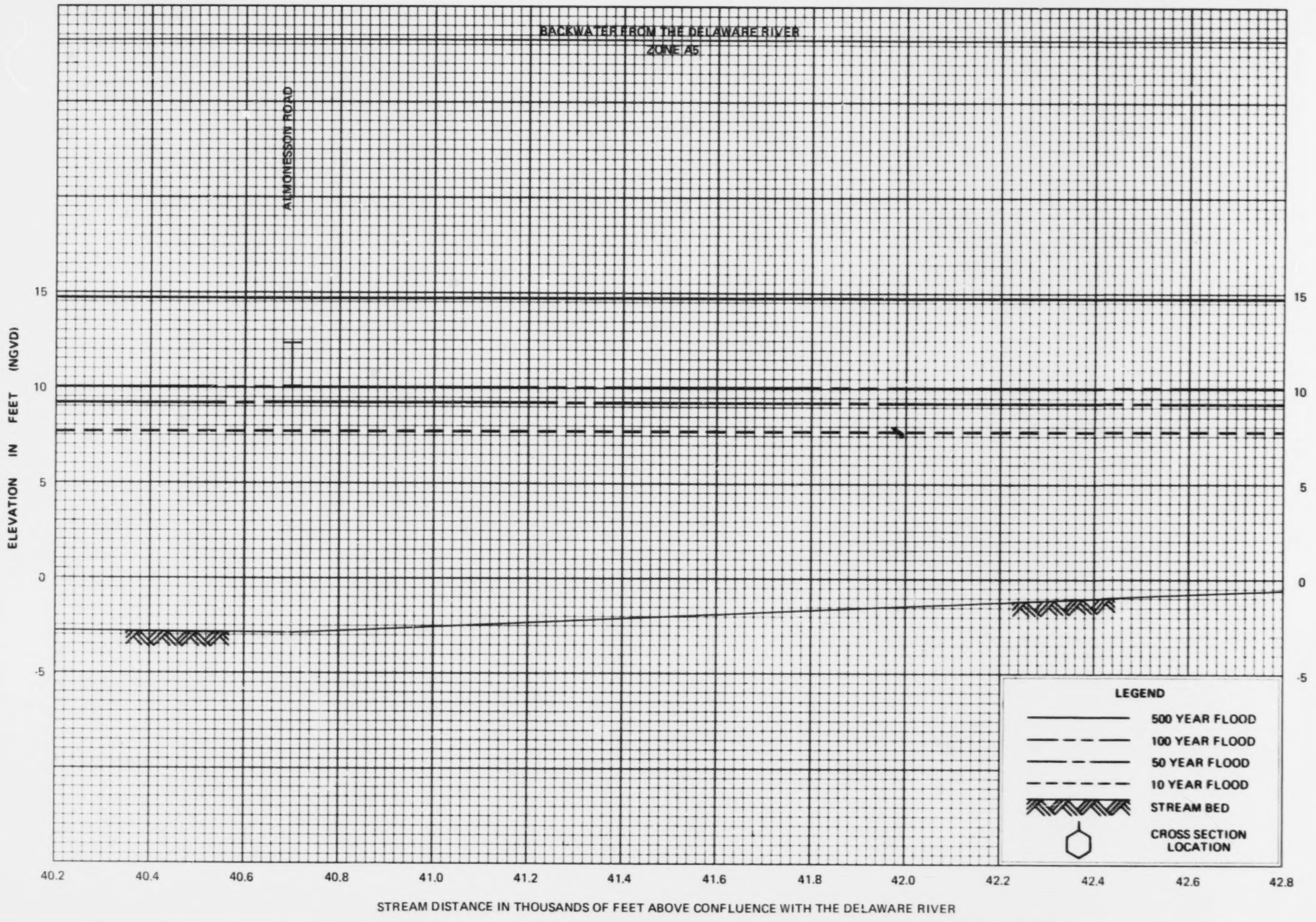

FLOOD PROFILES

SOUTH BRANCH BIG TIMBER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF DEPTFORD, NJ
(GLOUCESTER CO.)

11P

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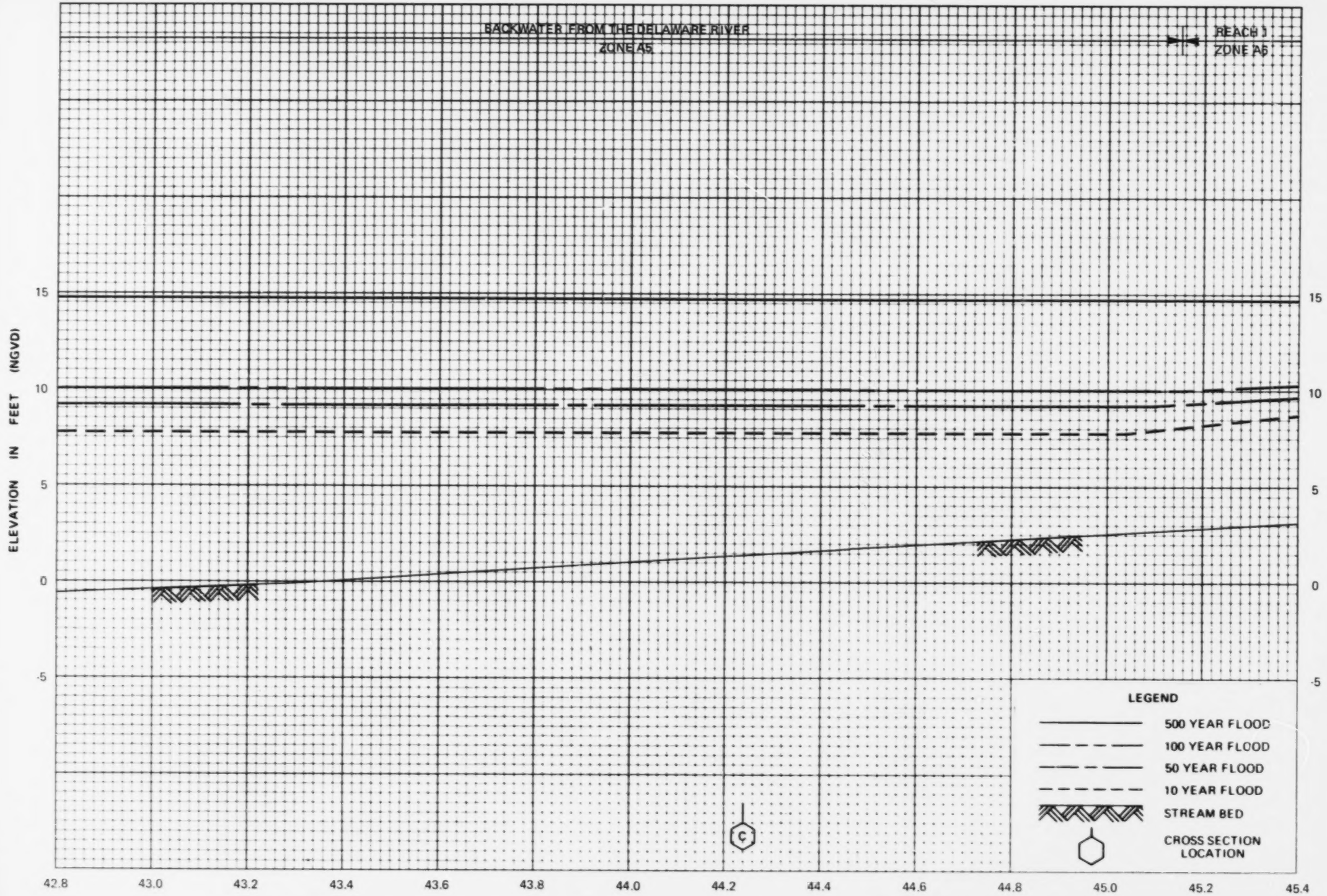

FLOOD PROFILES

SOUTH BRANCH BIG TIMBER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF DEPTFORD, NJ
(GLOUCESTER CO.)

12P

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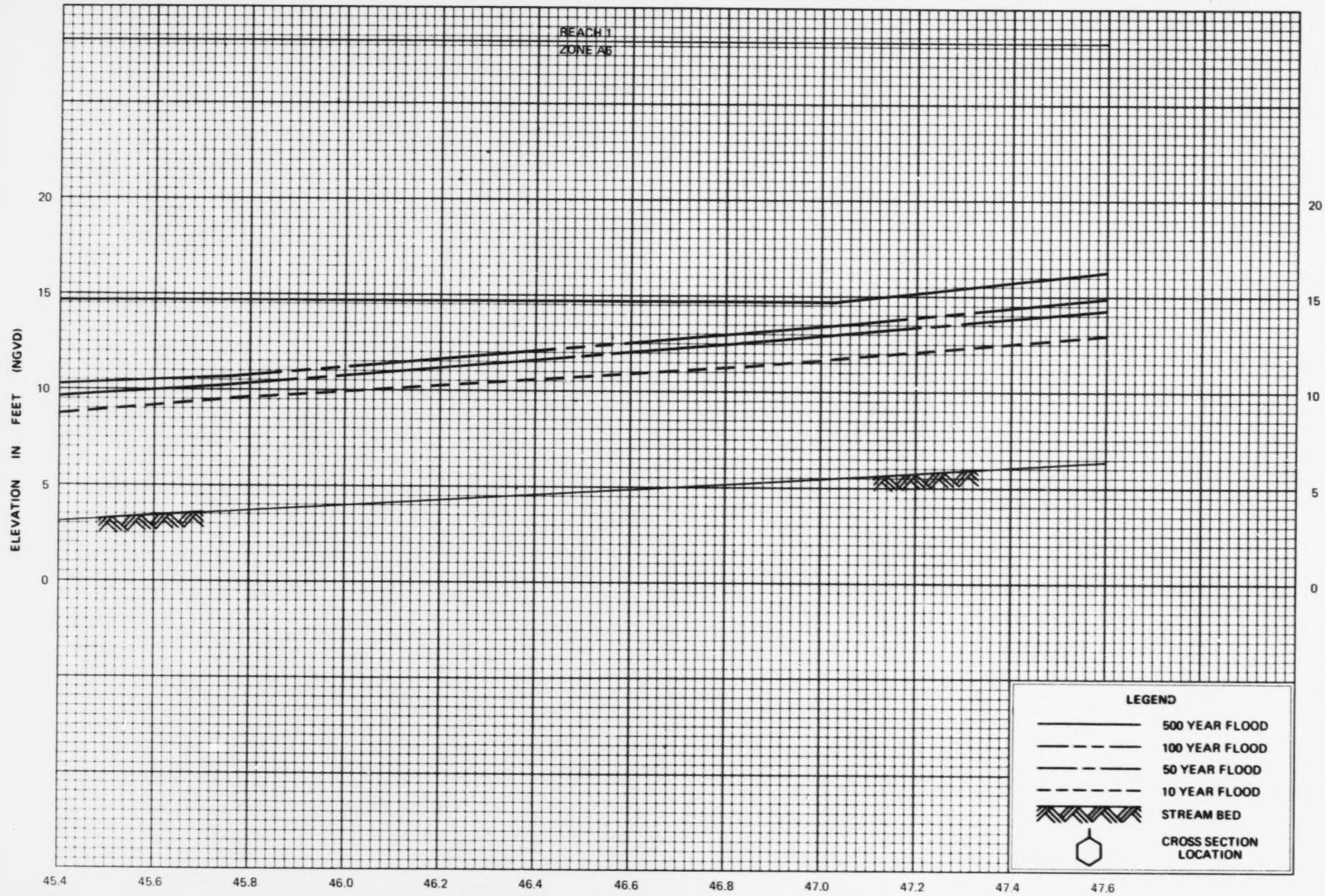

FLOOD PROFILES

SOUTH BRANCH BIG TIMBER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF DEPTFORD, NJ
(GLOUCESTER CO.)

13P

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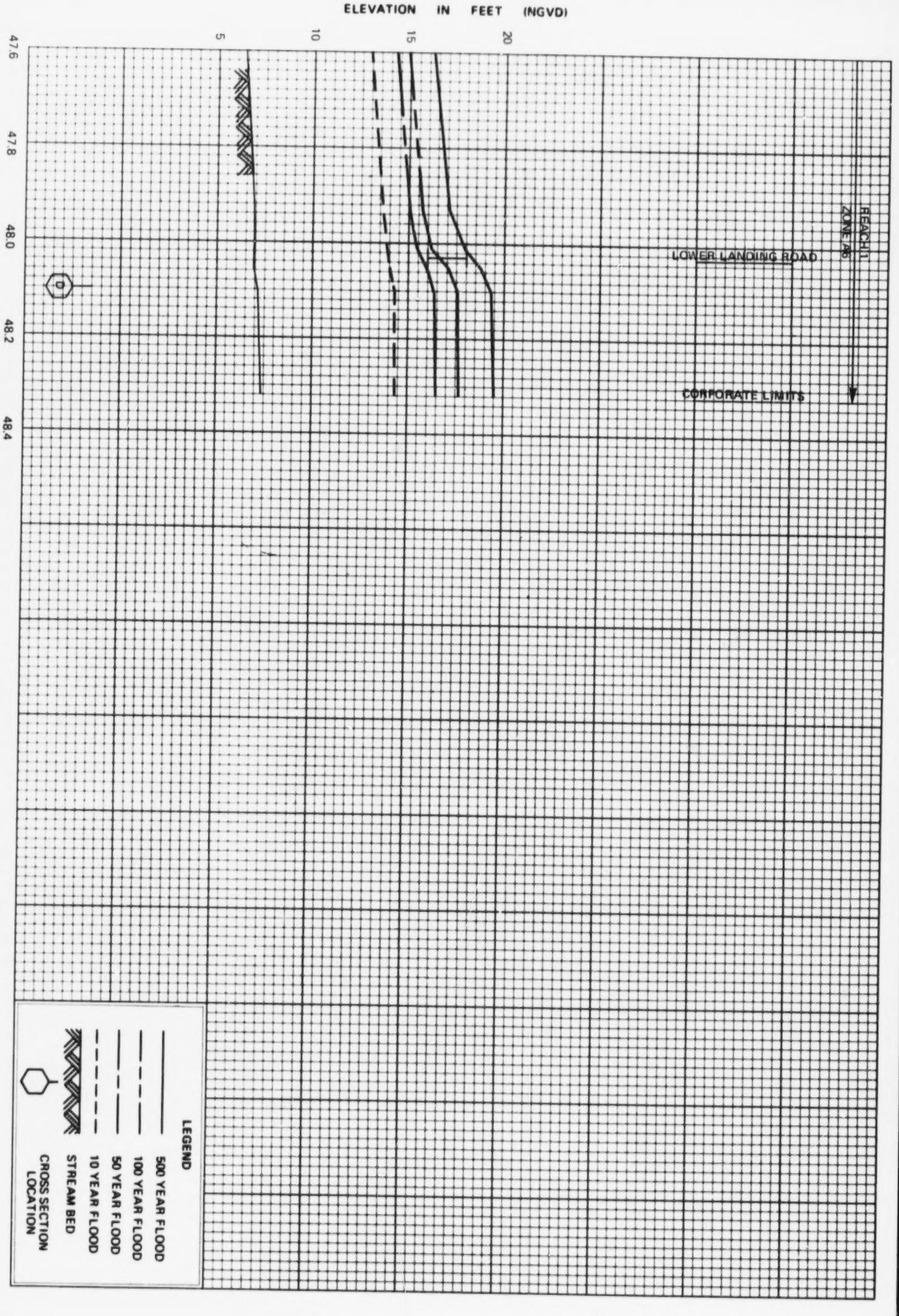

STREAM DISTANCE IN THOUSANDS OF FEET ABOVE CONFLUENCE WITH THE DELAWARE RIVER

30

14P	FEDERAL EMERGENCY MANAGEMENT AGENCY **TOWNSHIP OF DEPTFORD, NJ** (GLOUCESTER CO.)	**FLOOD PROFILES** **SOUTH BRANCH BIG TIMBER CREEK**